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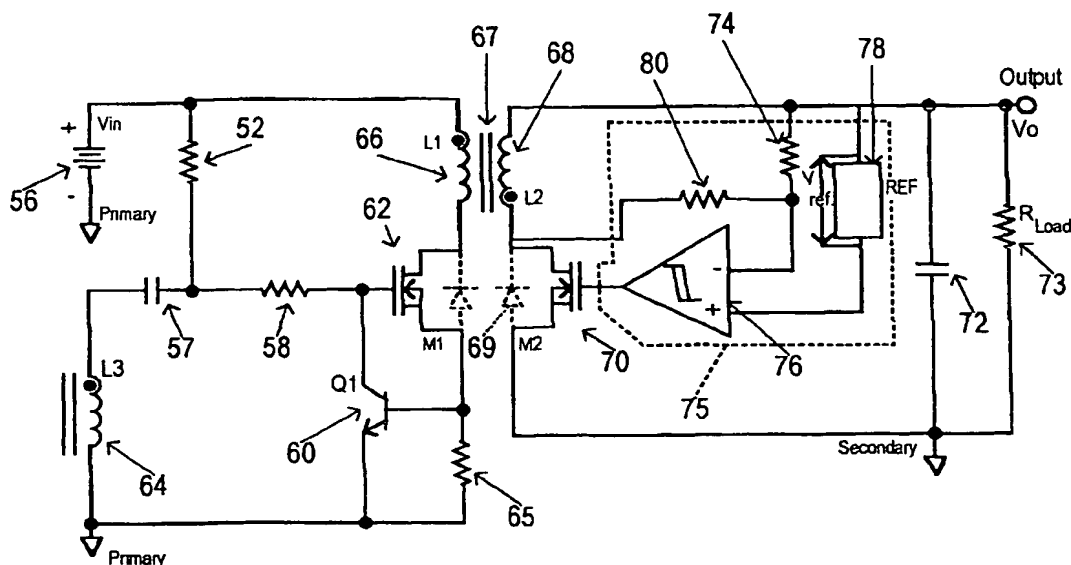
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(54) Title: SOFT SWITCHING HIGH EFFICIENCY FLYBACK CONVERTER

(57) Abstract: DC-DC converters such as flyback converters achieve self-regulation by communication information between primary and secondary circuits through the power transformer. Operating in accordance with a generalized concept or algorithm, the converter can be bi-directional and self-regulating. Control of the turn OFF times of semiconductor switches in first and second circuits coupled to first and second windings of the power transformer determines whether power flow is in one direction through the converter or the other direction. Turn ON timing of each semiconductor switch is when there is a reverse current through the switch and voltage across the switch is at or near zero. Turn OFF of a switch can be controlled from one or more operating parameters of the converter such as output voltage, in which case the converter's self-regulation is affected through duty cycle variation with variations in output voltage.